

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

- 1        1. (Currently amended) A method for facilitating validation of data  
2        retrieved from a secondary storage device, comprising:
  - 3            receiving a write request to write new data to a block of the secondary  
4            storage device;
  - 5            calculating a new checksum value from the new data;
  - 6            retrieving two previously stored checksum values, including a current  
7            checksum value and an old checksum value associated with the block of the  
8            secondary storage device, wherein the current checksum value relates to data that  
9            is supposed to be currently stored in the block and the old checksum value relates  
10          to data that was previously stored in the block, and wherein the current checksum  
11          value and the old checksum value are used to determine if the data that is  
12          supposed to be currently stored in the block device was actually stored;
  - 13            performing a checksum write operation to a validation device to update  
14            write both the current checksum value and the old checksum value to the  
15            validation device; and
  - 16            performing a data write operation to the secondary storage device to write  
17          the new data to the block of the secondary storage device.

- 1        2. (Original) The method of claim 1, wherein if the current checksum  
2        value is invalid, which indicates that the current checksum value has not been  
3        written to, and the old checksum value is similarly invalid, performing the

4 checksum write operation involves updating the current checksum value to be the  
5 new checksum value.

1       3. (Original) The method of claim 1, wherein if the current checksum  
2 value is valid and the old checksum value is invalid, performing the checksum  
3 write operation involves updating the old checksum value to be the current  
4 checksum value, and updating the current checksum value to be the new  
5 checksum value.

1       4. (Original) The method of claim 1, wherein if the current checksum  
2 value is valid and the old checksum value is valid, performing the checksum write  
3 operation involves updating the old checksum value to match data that is presently  
4 stored in the block on the secondary storage device, and updating the current  
5 checksum value to be the new checksum value.

1       5. (Original) The method of claim 4, wherein updating the old checksum  
2 value to match data that is presently stored in the block involves:

3           determining whether the current checksum value or the old checksum  
4 value matches data that is presently stored in the block on the secondary storage  
5 device; and

6           using the matching value to update the old checksum value.

1       6. (Original) The method of claim 1, further comprising:  
2           receiving a read request to read a second block of data from the secondary  
3 storage device;

4           performing a data read operation to read the second block of data from the  
5 secondary storage device;

6           calculating a checksum value from the second block of data;

7            performing a checksum read operation to read an existing checksum value  
8    for the second block of data from the validation device;  
9            comparing the calculated checksum value with the existing checksum  
10   value; and  
11            indicating an error condition if the calculated checksum value does not  
12   match the existing checksum value.

1            7. (Original) The method of claim 1, wherein the secondary storage device  
2   is a disk drive.

1            8. (Original) The method of claim 1, wherein the validation device is  
2   separate from the secondary storage device.

1            9. (Original) The method of claim 1, wherein the validation device and the  
2   secondary storage device are the same device.

1            10. (Currently amended) A method for facilitating validation of data  
2   retrieved from a disk, comprising:  
3            receiving a write request to write new data to a block of the disk;  
4            calculating a new checksum value from the new data;  
5            retrieving two previously stored checksum values, includi a current  
6   checksum value and an old checksum value associated with the block of the disk,  
7   wherein the current checksum value relates to data that is supposed to be currently  
8   stored in the block and the old checksum value relates to data that was previously  
9   stored in the block, and wherein the current checksum value and the old checksum  
10   value are used to determine if the data that is supposed to be currently stored in  
11   the block device was actually stored;

12        performing a checksum write operation to a validation device to ~~update~~  
13        write both the current checksum value and the old checksum value to the  
14        validation device;

15        wherein if the current checksum value is invalid, which indicates that the  
16        current checksum value has not been written to, and the old checksum value is  
17        similarly invalid, performing the checksum write operation involves updating the  
18        current checksum value to be the new checksum value;

19        wherein if the current checksum value is valid and the old checksum value  
20        is invalid, performing the checksum write operation involves updating the old  
21        checksum value to be the current checksum value, and updating the current  
22        checksum value to be the new checksum value;

23        wherein if the current checksum value is valid and the old checksum value  
24        is valid, performing the checksum write operation involves updating the old  
25        checksum value to match data that is presently stored in the block on the disk, and  
26        updating the current checksum value to be the new checksum value; and

27        performing a data write operation to the disk to write the new data to the  
28        block of the disk.

1        11. (Currently amended) A computer-readable storage medium storing  
2        instructions that when executed by a computer cause the computer to perform a  
3        method for facilitating validation of data retrieved from a secondary storage  
4        device, the method comprising:

5        receiving a write request to write new data to a block of the secondary  
6        storage device;

7        calculating a new checksum value from the new data;

8        retrieving two previously stored checksum values, includi a current  
9        checksum value and an old checksum value associated with the block of the  
10      secondary storage device, wherein the current checksum value relates to data that

11     is supposed to be currently stored in the block and the old checksum value relates  
12     to data that was previously stored in the block, and wherein the current checksum  
13     value and the old checksum value are used to determine if the data that is  
14     supposed to be currently stored in the block device was actually stored;  
15                 performing a checksum write operation to a validation device to update  
16     write both the current checksum value and the old checksum value to the  
17     validation device; and  
18                 performing a data write operation to the secondary storage device to write  
19     the new data to the block of the secondary storage device.

1                 12. (Original) The computer-readable storage medium of claim 11,  
2     wherein if the current checksum value is invalid, which indicates that the current  
3     checksum value has not been written to, and the old checksum value is similarly  
4     invalid, performing the checksum write operation involves updating the current  
5     checksum value to be the new checksum value.

1                 13. (Original) The computer-readable storage medium of claim 11,  
2     wherein if the current checksum value is valid and the old checksum value is  
3     invalid, performing the checksum write operation involves updating the old  
4     checksum value to be the current checksum value and updating the current  
5     checksum value to be the new checksum value.

1                 14. (Original) The computer-readable storage medium of claim 11,  
2     wherein if the current checksum value is valid and the old checksum value is  
3     valid, performing the checksum write operation involves updating the old  
4     checksum value to match data that is presently stored in the block on the  
5     secondary storage device, and updating the current checksum value to be the new  
6     checksum value.

1        15. (Original) The computer-readable storage medium of claim 14,  
2 wherein updating the old checksum value to match data that is presently stored in  
3 the block involves:

4            determining whether the current checksum value or the old checksum  
5 value matches data that is presently stored in the block on the secondary storage  
6 device; and

7            using the matching value to update the old checksum value.

1        16. (Original) The computer-readable storage medium of claim 11,  
2 wherein the method further comprises:

3            receiving a read request to read a second block of data from the secondary  
4 storage device;

5            performing a data read operation to read the second block of data from the  
6 secondary storage device;

7            calculating a checksum value from the second block of data;

8            performing a checksum read operation to read an existing checksum value  
9 for the second block of data from the validation device;

10          comparing the calculated checksum value with the existing checksum  
11 value; and

12          indicating an error condition if the calculated checksum value does not  
13 match the existing checksum value.

1        17. (Original) The computer-readable storage medium of claim 11,  
2 wherein the secondary storage device is a disk drive.

1        18. (Original) The computer-readable storage medium of claim 11,  
2 wherein the validation device is separate from the secondary storage device.

1           19. (Original) The computer-readable storage medium of claim 11,  
2       wherein the validation device and the secondary storage device are the same  
3       device.

1           20. (Currently amended) An apparatus that facilitates validation of data  
2       retrieved from a secondary storage device, comprising:  
3            a receiving mechanism that is configured to receive a write request to  
4       write new data to a block of the secondary storage device;  
5            a checksum mechanism that is configured to calculate a new checksum  
6       value from the new data;  
7            a retrieving mechanism that is configured to retrieve two previously stored  
8       checksum values, includi a current checksum value and an old checksum value  
9       associated with the block of the secondary storage device, wherein the current  
10      checksum value relates to data that is supposed to be currently stored in the block  
11      and the old checksum value relates to data that was previously stored in the block,  
12      and wherein the current checksum value and the old checksum value are used to  
13      determine if the data that is supposed to be currently stored in the block device  
14      was actually stored;  
15            a checksum writing mechanism that is configured to perform a checksum  
16       write operation to a validation device to update write both the current checksum  
17       value and the old checksum value to the validation device; and  
18            a data writing mechanism that is configured to perform a data write  
19       operation to the secondary storage device to write the new data to the block of the  
20       secondary storage device.

1           21. (Original) The apparatus of claim 20, wherein if the current checksum  
2       value is invalid, which indicates that the current checksum value has not been  
3       written to, and the old checksum value is similarly invalid, the checksum writing

4 mechanism is configured to update the current checksum value to be the new  
5 checksum value.

1        22. (Original) The apparatus of claim 20, wherein if the current checksum  
2 value is valid and the old checksum value is invalid, the checksum writing  
3 mechanism is configured to update the old checksum value to be the current  
4 checksum value and to update the current checksum value to be the new  
5 checksum value.

1        23. (Original) The apparatus of claim 20, wherein if the current checksum  
2 value is valid and the old checksum value is valid, the checksum writing  
3 mechanism is configured to update the old checksum value to match data that is  
4 presently stored in the block on the secondary storage device, and to update the  
5 current checksum value to be the new checksum value.

1        24. (Original) The apparatus of claim 23, wherein while updating the old  
2 checksum value to match data that is presently stored in the block, the checksum  
3 writing mechanism is configured to:

4            determine whether the current checksum value or the old checksum value  
5 matches data that is presently stored in the block on the secondary storage device;  
6 and to

7            use the matching value to update the old checksum value.

1        25. (Original) The apparatus of claim 20,  
2            wherein the receiving mechanism is configured to receive a read request to  
3 read a second block of data from the secondary storage device;  
4            a data reading mechanism that is configured to perform a data read  
5 operation to read the second block of data from the secondary storage device;

6           wherein the checksum mechanism is configured to calculate a checksum  
7   value from the second block of data;  
8           a checksum reading mechanism that is configured to perform a checksum  
9   read operation to read an existing checksum value for the second block of data  
10   from the validation device; and  
11          a validation mechanism that is configured to,  
12                compare the calculated checksum value with the existing  
13   checksum value, and to  
14                indicate an error condition if the calculated checksum value  
15   does not match the existing checksum value.

1           26. (Original) The apparatus of claim 20, wherein the secondary storage  
2   device is a disk drive.

1           27. (Original) The apparatus of claim 20, wherein the validation device is  
2   separate from the secondary storage device.

1           28. (Original) The apparatus of claim 20, wherein the validation device  
2   and the secondary storage device are the same device.